



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/717,465	11/21/2003	Alexandre Corjon	245498US41XDIV	8127
22850	7590	02/16/2006		
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER HOLZEN, STEPHEN A	
			ART UNIT 3644	PAPER NUMBER

DATE MAILED: 02/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/717,465	Applicant(s) CORJON ET AL.	
	Examiner Stephen A. Holzen	Art Unit 3644	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 3-5, 14-16, 20-22 and 29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 6-13, 17-19, 23-28, 30 and 31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. Claims 1-31 are pending
2. Claims 3-5, 14-16, 20-22, and 29 are withdrawn
3. Claims 1-2, 6-13, 17-19, 23-28, 30 and 31 have been examined.
4. The applicant has amended the claims in an attempt to claim an active step of "exciting". The examiner however does not believe that the step "excites" is (1) actively claimed or (2) limiting. The applicant is claiming a method in claim 1 that has only one step: --generating a perturbation--. No other steps are actively recited. The step of "exciting" is a desired outcome of this step and not a patently limiting method limitation. The examiner does not give considerable weight to the phrase "predetermined". All this limitation means is that applicant is not randomly emitting a fluid, but instead is "engineering" an approximate flow rate. The examiner asserts that unless the prior art discloses randomly searching for the proper perturbation wavelength the prior art would inherently have taken into consideration (1) weight of the plane (2) velocity (3) environmental conditions, etc. to determine the desired fluid characteristics.

It should be understood that the examiner does not believe that what the perturbation does limits the generating step. The desired result of the active method steps is that the fluid perturbation destroys the vortex. However the applicant is not in control of the vortex and instead is in active control of the perturbation device and hopes that the vortices will be destroyed. The perturbation therefor is only capable of destroying the vortices (i.e. capable of exciting the instability modes).

5. Re – Claims 2, 9, 13, 17 and 24: the location of the generation of the perturbation does not limit the method step. The step of “generating” is not limited by the location of the device, and therefore this claim does not limit the method of claim 1.

6. Re – Claims 11, and 12: Again, applicant does not actually create the diameters of the perturbation. Instead the applicant hopes that the perturbation diameters are greater than a distance between the first and second vortices.

7. Re – Claims 18, 23 and 27: The examiner does not understand how a perturbation can correspond to an instability. The examiner does not believe this claim is proper. Shouldn't the claim say, “wherein the periodic perturbation corresponds to the vortex's Bernard-von Karman instability”? Lacking the vortex's environmental context, the claim does not appear to make sense. How can a perturbation be an instability? The examiner does however acknowledge that a perturbation capable of creating an instability in a vortex.

8. Re – Claim 31: It should be noted that applicant is claiming the active step of “increasing the core diameter of the eddies” but instead is claiming generating a -- perturbation that is capable of increasing the core diameters of the eddies--.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1-2, 6-13, 17-19, 23-28, 30 and 31 rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Yuan (3,936,013).

Yuan teaches an aircraft having two fixed wings (11) on each side of the fuselage (12). As the aircraft moves through the air, the wings cause the air to move such that they form vortices behind the aircraft. Yuan then goes on to disclose a tube (21) for blowing a jet of fluid through an orifice 22. The extended tube is attached to the wing 11 and at least a portion thereof extends therein (see Figure 2). Fluid from the fluid source enters a conduit 23 and ejects from an orifice opening 22.

Yuan teaches that the location of the extended tube can be designed according to the configuration of the wing planform which would allow the vortex control system to operate most efficiently for a given configuration of the wings. (see Col. 3, lines 63+ - Col. 4, lines 3.) Yuan further teaches that the extending tube may be attached to the wing tip at a location anywhere between the leading and trailing edges (see Col. 4, lines 16-18) and that it is desirable to have jet mass flow along the extended tube varying in accordance with the vortex velocity variations to improve the efficiency of the fluid usage.

It is the examiner's position that Yuan teaches the active step of generating a perturbation having the defined characteristic, or in the alternative it would have been obvious to generate the perturbation such that it would have these characteristics (capable of then exciting the instability modes, see Yuan Col. 4, lines 59-63: "the mass flow of the jet can be increased or decreased by a flow regulator") since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boeson, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980)

It is the examiner's position that Yuan teaches that the tube can be located at almost any position that results in increased aerodynamic efficiency; and if Yuan does not specifically teach this, it would be obvious in light of the teachings of Yuan to locate the tube at almost any position that results in increased aerodynamic efficiency since

it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse 86 USPQ 70. The jet device is either disclosed as being next to the inherent and necessarily aircraft flaps of Yaun or would have been obvious to locate adjacent thereto for the reasons of increasing vortex destruction efficiencies.

Yaun does not use applicant's specific claim language (i.e. wavelengths, exciting, instability mode, etc.). Absent any convincing evidence to the contrary the examiner believes that vortex destruction devices that interact with eddy flows "excite the instability mode" of the eddies and "accelerate the destruction of the resulting vortex".

The examiner believes this is the case since it is old and well known in the art (as taught by Bilanin et al, US 6,042,059) that the destruction of vortices is "enhanced by introducing time-varying disturbances" which "excite the instabilities" associated with an eddy. The goal of the excitation is to produce a time-varying motion in the position of the centroid of eddies of one or more vortex pairs at particular frequencies to start a process that leads to rapid break up of the vortices. Excitation of the centroid is particularly effective for a destruction of a vortex wake. (see Col. 4, lines 42-51). Furthermore Jason Ortega (Ortega) discloses that it is well known in the art that active wake alleviation designs include concepts such as pulsating jets (page 1, col. 1, line 32) and the use of these jets causes an instability, which then drives the vortices to form vortex rings which reduce their intensity. Ortega cites

Bristol et al (page 2, Col 2, lines 18-27) as showing that the wavelength of maximum instability is the one in which the vortex self-induced rotation rate keeps the sinuous disturbance aligned in the straining field of the other vortex. The examiner concludes then that the wavelengths generated by Yaun's jets are exciting an instability mode of the eddies such that they accelerate the destruction of the trailing vortices.

Re – Claim 11 and 12: These claims attempt to further limit the diameters of the 1<sup>st</sup> and 2<sup>nd</sup> vortices. The diameters of the vortices do not limit the scope of a method of generating a perturbation. The diameters of the vortices are dependant upon the (1) structure and size of the wings (2) the weight of the aircraft (3) the atmospheric conditions. The diameters of the vortices, which are generated as an aircraft flying through the air, do not limit the scope of the method. In the alternative, should the applicant convincingly argue that the diameters of the vortices do limit the steps of generating the examiner asserts that it would be obvious to design the aircraft and its wings such that they are “configured” to generate 1<sup>st</sup> and 2<sup>nd</sup> vortices having -- diameters that are greater than a predetermine proportion of a distance between the first and second control-rotating vortices” since it has been held that discovering an optimum value (length) of a result (vortex destruction) effective variable (diameter) involves only routine skill in the art. In re Boeson, 617 F. 2d 272 205 USPQ 215 (CCPA 1980).



Re – Claims 18, 23, and 27: As best understood: Yuan discloses a perturbation that is capable of corresponding to a Benard-von Karman instability.

Re – Claims 19, 25 and 30: Yuan disclose a perturbation that is capable of inducing an increase in three-dimensional elliptic instabilities.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen A. Holzen whose telephone number is 571-272-6903. The examiner can normally be reached on M-F 8:30-5:00.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Teri Luu can be reached on 571-272-7045. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sah

Application/Control Number: 10/717,465  
Art Unit: 3644

Page 9



TERI PHAM LUU  
SUPERVISORY  
PRIMARY EXAMINER